Deliverable 2.6

Info-sheet quick scan VSD for case studies

Date: November 2021

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 869474.

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0	November 5th	First version	Mar Palmeros, Gonzalo Gamboa
1	November 8th	Includes summary of the outcomes of VSD and CoP meetings	Mar Palmeros, Gonzalo Gamboa
3	November 30th	Includes review and comments from Lotte Asveld (TUDELFT)	Mar Palmeros, Gonzalo Gamboa
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[1] **R**=Document, report; **DEM**=Demonstrator, pilot, prototype; **DEC**=website, patent fillings, videos, etc.; **OTHER**=other

[2] **PU**=Public, **CO**=Confidential, only for members of the consortium (including the Commission Services), **CI**=Classified

Table of Contents

1. Introduction

This deliverable is associated with Task 2.2 – Value sensitive design and optimization, integrating moral values, social perceptions and behaviours. It presents feedback for the (preliminary) results of the value sensitive design process from the communities of practice to the case studies (WP3-6).

In Water-Mining, VSD is aimed at incorporating the stakeholders' values, concerns and expectations into the early-stage design, development and implementation of novel circular water mining systems. VSD is a suite of Design for Values approaches that have been developed to consciously incorporate societal values into emerging technologies (Hoven et al., 2015), which are often developed in processes that are blind to the context and the stakeholders' realities (Palmeros Parada et al., 2017).

Three phases are identified within the VSD process (Figure 1):

- Setting the scene (M1-M10). Technical and societal aspects of the Water Mining systems to be developed in the project are identified to support later stages of VSD. Technical aspects refer to design scope and main design variables of the different technical systems, while societal aspects refer to stakeholders and societal values relevant to the Water Mining systems.
- Exploring opportunities and barriers (M11-M35). The feedback on stakeholder values and design propositions from the 1st round of workshops for the different Case Studies will be used as input to re-define the design propositions intended to shape the development of the Water Mining systems; i.e., a process of value sensitive optimization based on stakeholders' values and expectations.
- Full-implementation study (M36-M48). Here, the research team will perform an analysis of real scale implementation of Water Mining systems. For this, the implications of the full-scale implementation of the systems will be investigated, to derive recommendations for their development considering the identified stakeholder values and the feedback from the previous rounds of workshops.

During the first year of the project, TUDELF and UAB teams, together with the CS partners, have identified social values, perceptions and value tensions (T2.2.1) and have carried out the first stage of the Value Sensitive Design Process (T2.2.2). The main outcome of this process is a set of design propositions aimed at incorporating social values in emerging water-mining technologies.

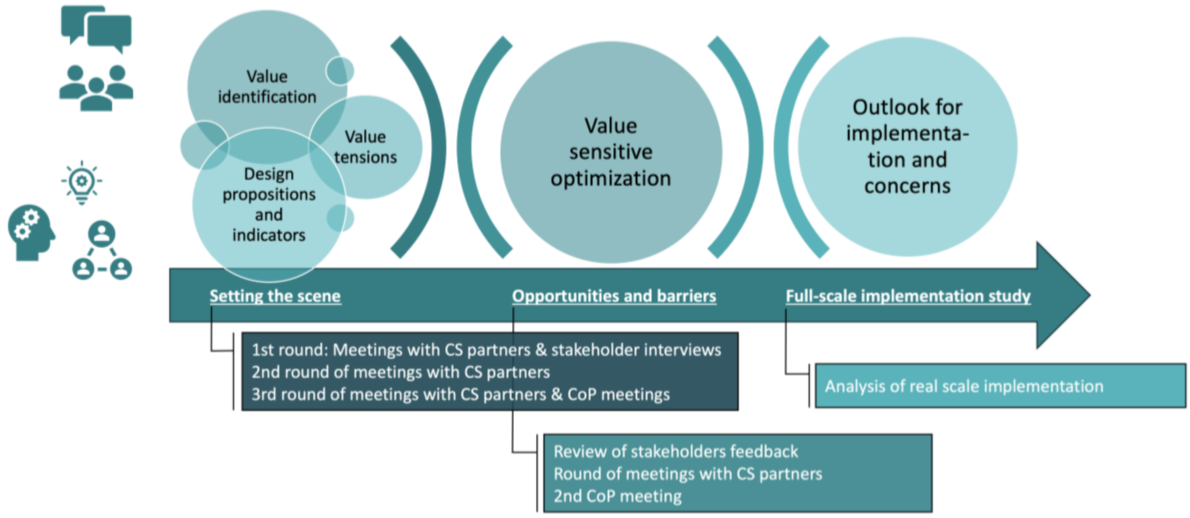

Figure 1. value Sensitive Design process

Technical aspects have been investigated internally through participant observation of WP 3 to 6 (case studies) kick-off meetings, and separate meetings for each Case Study with relevant project partners (mostly Case Study owners, facilitators and/or Work Package Leaders). Societal aspects were identified through a literature review, and they were empirically investigated through stakeholder engagements as part of T2.1 (Figure 2).

Recall that T2.1 was aimed at establishing the Communities of Practices: "social learning systems that bring together people who share a concern or a passion for something they do and learn how to do it better as they interact regularly (Wenger-Trayner and Wenger-Trayner 2015, in Fulgenzi et al 2020). These stakeholders groups are the main communication space between the project and stakeholder groups regarding the VSD process.

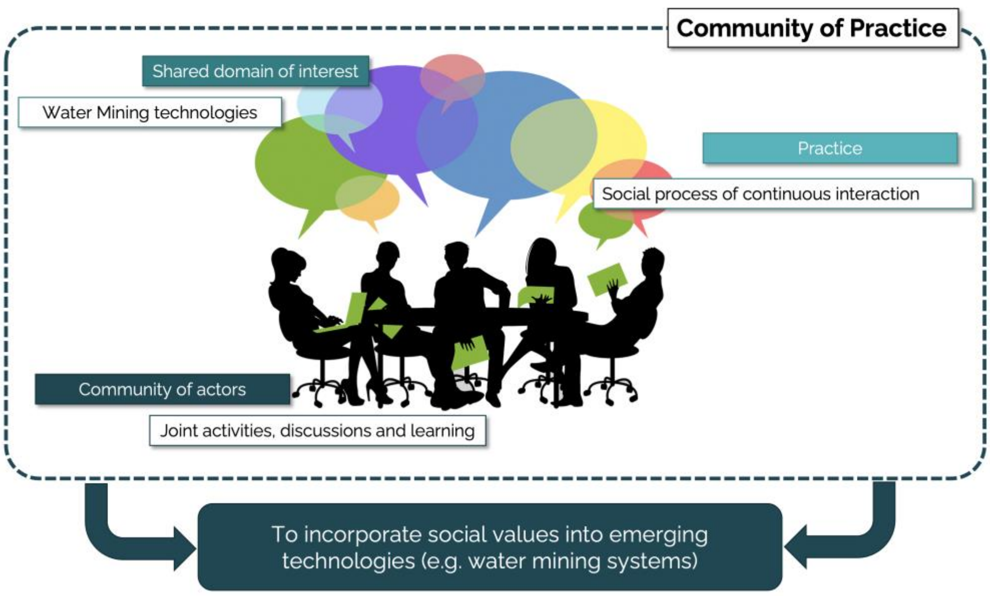

Figure 2. Value Sensitive Design and Communities of Practice

In the following sections we present the followed methodology to identify social values and value tensions, and to develop the design propositions for each case study. Then, a summary of the main outcomes and the feedback received from stakeholders in the first meeting of the Communities of Practices (CoP) are presented.

A complete report on the identification of social values, value tensions and design propositions has been prepared with the information generated during this first year of the project. That report is the basis for this Deliverable 2.6, and can be found here: https://app.quodari.com/memo/X1PEzRY5pm .

2. Methodology

In this section we explain the process of translating social values into design propositions. In this report, ***social values refer to standards that social groups or stakeholders employ to define their goals and refer to what is important, considered desirable and acceptable***, in this case expressed by project partners directly involved in the development of the technologies or by stakeholders.

Values relevant to Water-Mining are identified by analysing the presentation of the project in the Grant Agreement (Part B, Section 1), as well from each case study (CS). To do so, a text analysis based on open coding was carried out (see below).

Aspects of importance for each CS were identified from two types of meetings with project partners within each CS (see bullets below) and the video script prepared by WP2 in collaboration with Case Study Owners (CSO) and Case Study Facilitators (CSF) for presenting the CSs to external stakeholders.

Start-up Meetings: The first VSD meetings were held with CSO, CSF, and/or Work Package Leaders (WPL) from October 2020 to January 2021. These meetings were aimed at understanding the technical systems for subsequent activities in Task 2.2 (Value Sensitive Design, VSD). Also, these meetings were used to explore the aspects of importance to project partners with regards to their case studies. For this, in these meetings project partners were asked about their expectations, research focus, and concerns about the technical systems they were working on. Feedback from project partners on the meeting notes was used to clarify any misunderstanding or misinterpretation of their statements.

VSD Meetings: Three rounds of VSD meetings were held with the technical project partners of each CS in the period March 2021 to October 2021. WPL, CSOs, and CSFs participated in these meetings and, in CS4 and CS5, also a project partner involved in Technology Development. In the first round of VSD meetings, project partners were introduced to the VSD approach in Water Mining. During the meetings a brief exercise about values was held, in which participants were asked to reflect on what they would consider a successful implementation of their system at full scale, and its desired impacts. In the 2nd round of meetings, project partners co-developed with the VSD researcher a map of the technical systems of each CS (main technical features and design rationale). In the 3rd round of meetings, project partners discussed and reflected over the identified stakeholder values, value tensions, and their relation to the CS system to derive design propositions.

Project values were first identified from the reviewed documents and the start-up meetings. The documents and meeting recordings were analysed with open coding focused on identifying aspects of importance to the project and case studies. At the end of the coding, the coded segments of the grant agreement were analysed to identify overall project values. Then, the codes for the specific case studies were contrasted to the overall project values to see how values are specified in the different case studies, and also to identify emerging CS-specific values and/or concerns.

In parallel to the VSD first and second VSD meetings, a series of interviews were carried out with key informants: i.e. subjects that are well-informed, reflective, have first-hand knowledge about an issue and are willing to talk extensively with the researcher (Martín-Crespo Blanco & Salamanca Castro, 2007). The interviews were recorded, transcribed and qualitatively analyzed with open coding focused on identifying aspects of importance to the interviewees. A report putting together project values, social values and identifying value tensions was written and validated by CS partners. This validated report, together with a review of the literature on societal values and concerns around resource recovery, was the basis for the third VSD meeting with CS partners, which was aimed at developing a series of design propositions to deal with the main issues and concerns raised by project partners and key informants.

Design propositions are recommendations for the development of the technology in the case study context (Palmeros Parada, et al. 2018). It is desirable that they are considered during the project duration (e.g. for further investigation, or to be discussed in a future Communities of Practice (CoP) meetings), but it may be that some are beyond the scope or the capacity of the project. Also, a series of policy proposals were identified to deal with issues that are beyond the technological development. The feedback from stakeholders and if/how design propositions can be approached in the project will be discussed in a 4th VSD meeting after the 1st CoP meeting

A first round of CoP meetings took place in September and October 2021. For each CS, relevant stakeholders (as identified in Task 2.1) were invited to be part of the Community of Practice and join the first CoP meeting. CS owners and facilitators prepared the meetings' agendas, which included the presentation of the relevant CS (technologies, objectives), getting to know all participants, defining a common objective for the CoP, and to have an initial discussion of the preliminary results of VSD and Market Mapping (WP9). In some CS, however, there was very little or no time for a VSD discussion because priority was given to getting all participants familiarized with the CS and each other.

3. Results

This section summarizes the main issues raised during the first VSD phase: setting the scene. This information emerged from the questionnaires and in-depth interviews with key informants, the meetings with project partners, and the feedback received by participants in the first CoP meeting. Overall, the main tensions and uncertainties throughout the case studies are related to:

- Different views of the ownership of raw materials, technology, property rights and products, and the distribution of benefits and costs they imply.
- Different sustainability concerns, such as the use of renewable energy for climate change mitigation, and their associated cost and land requirements.
- Economic sustainability expectations, like agricultural development from increased water availability, and their potential long-term sustainability impacts, such as increased water and land demand.
- Water and resource qualities with the proposed Water-Mining systems, and the energy, emissions and costs required to attain these qualities, as well as the local needs or priorities for water use.
- Different visions of a circular economy, which can be seen as, e.g., the local integration of resources for creating local impact, or as the valorisation of wastewater streams into high-value products that enter international value chains.
- Uncertainties about the safety of resources recovered from wastewater (and how to measure it), acceptable risk, and the applicable legislation to these resources.
- Uncertainties around the allocation of responsibility in the circular economy, including safety, investment risk and liabilities.

The tables in sections 3.1 to 3.6 present the identified value tensions and uncertainties for each Case Study. The first column of the tables presents the general aspects to which the main issues identified (second column) relate. The third column presents the ideas expressed by stakeholders in the first CoP meeting. It is important to notice that the first CoP meeting was mainly aimed at establishing the CoPs, so most of the time was devoted to present the project and case study objectives, and to know each other. Some CSs we able to include discussions on VSD in the meeting, but most CS were not able to cover all issues that have merged in the previous steps of the VSD process.

3.1. Case study 1. Lampedusa

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Affordability, Distributive Justice and Societal Acceptance	Zero liquid discharge (ZLD) comes with energy and economic costs in an island with limited energy resources. However, the cost and energy impact of the ZLD system, and possibilities with waste heat integration are not fully known yet. They partly depend on the revenues coming from the purified salts and the implemented business plan.	*Not discussed in the CoP*

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Efficiency and Long-term Sustainability	Integration with waste heat from fossil resources implies a risk of fossil energy lock-in effects. In Lampedusa there are limited areas for renewable energy sources (RES), and it is already expected that fossil resources are the only alternative in the short to medium term. If the system were to be integrated in another location with available RES, the thermal equipment could be integrated with renewable heat as in CS2.	Some stakeholders supported the importance of the sustainable development which means use of renewable sources, use of technology but in a sustainable way, especially in small islands as Lampedusa. Moreover, it should pay attention to avoid ecosystem alteration.
Sustainability Trade-offs	The avoidance of brine discharge through ZLD implies GHG emissions associated to energy requirements. About 60 to 70% of CS1 runs on waste heat, which would otherwise be wasted. Given the limited availabiliy of land for RES, the energy requirement will add to the energy imports and GHG emissions of the island, and raises questions about the desirability of ZLD. There is a risk to increase water consumption due to higher efficiency in the provision of water, leading to larger environmental impacts (more energy for more water being consumed). Drinking water needs are already covered by SWD and it is unknown what the effects on water consumption will be.	*Not discussed in the CoP*
Water and Technology Ownership	Some question the ownership of seawater, of desalinated water, and of the technology developed with public funds, and who would be the beneficiaries of implementing the system.	*Not discussed in the CoP*

3.2. Case study 2. Plataforma solar de Almería

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Affordability, Distributive Justice and Societal Acceptance	Adding a ZLD approach puts pressure on water access (affordability). Farmers call for subsidies, which is an ongoing issue in Spain. This raises the question of how far the CS system can go with salt recovery considering costs (and who is willing to pay them) and environmental impacts.	Some argue that small desalination plants used and paid by irrigation communities would make the management of brine easier. Most of the participants think that those who pollute or have unsustainable water uses should be penalized. It is perceived that public management creates mechanisms to manage brine, but there are some obstacles in the private sector. Some agreed that polluters should pay and to apply fiscal incentives for developing clean technologies, although others were more positioned in the line of subsidies and aid for clean technologies (e.g. subsidizing RES or taxing those desalinating water with fossil-fuels based electricity/heat).
Efficiency and Long-term Sustainability	Increasing the energy and water efficiency could reduce the costs of water desalination, and in the longer term lead to lower water prices and lower costs for agricultural production. Then, agricultural expansion is a risk that may lead to higher water consumption and land prices.	Regarding the protection of aquifers, the consensus is that knowledge about the state of aquifers should be improved, and illegal abstractions should be fought. Specifically, control networks should be established to detect illegal water captures. In addition, it was suggested that farmers using desalinated water should have to give up the rights to the concessions (extraction from the aquifer) for as long as they use desalinated water.
Local vs. Global Circular Economy	For some a circular economy entails the use of local energy sources to process a local resource for local production. However, as desalinated water is for irrigation purposes and agriculture is mostly export-oriented, most of the recovered resources would exit the local context and break the expected local circularity.	In general terms, participants agreed that no circular economy exists when water is used to irrigate vegetables that ended up in the rest of Europe. But they agreed that it is more sustainable in energy terms and environmentally friendly to grow vegetables in Almería than in the Netherlands

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Sustainability Trade-offs	RES for ZLD and SWD creates a tension between the placing of desalination plants close to the coast and the use of land (e.g. land cost and tourism, impacts on wild-life).	When talking about decarbonization of the desalination sector, participants were convinced that only a large-scale thermal desalination plant coupled with CSP can achieve decarbonization, since RO with PV panels could not be possible due to the prohibitive cost of PV batteries. However, some consider that thermal desalination would have disadvantages compared to reverse osmosis technologies, because the former has a larger land use There is the feasibility of using desalinated water blended with brackish water extracted from aquifers that are affected by marine intrusion or contamination by irrigation effluents. Brackish water of the upper aquifer that sometimes overflows in some places, flooding greenhouses, must be pumped into the sea, which implies a high energy cost. Brackish water can be desalinated at a lower cost, although in this case the nutrients that it contains could not be used.
Water Ownership	Some actors highlight the fact that desalinated water is a public good, which should be used to improve the quality of life of the general population. On the other side, several actors point out that (thermal) desalinated water can foster the agricultural sector in the South of Spain (due to its higher availability for irrigation), which entails private benefits from a public good.	There was considerable agreement on the need to build different desalination plants for different uses and avoid the same desalination plant supplies farmers and urban uses. It was commented that those who use the water should pay the desalination plants, except for depressed areas or areas at risk of depopulation, where the investment should be public to promote the local economy. As well, some argue that desalinated water costs should be fairly distributed among users; subsidies and taxation should be considered to arrive to a more equitable scheme across regions. Current uses of desalinated water in Almería are 80% agricultural and 20% urban. Some argue that the desalinated water should be preferably used in the urban domain, because urban users can afford it and it is a priority. Regarding the question, who pays the investment costs of the technology? It would have to be public and little by little give way to the private sector, so competitiveness is increased. Some agreed that polluters should pay and

Aspects	Main issues identified in VSD	Stakeholder response to main issues
		to apply fiscal incentives for developing clean technologies, although others were more positioned in the line of subsidies and aid for clean technologies (e.g. subsidizing RES or taxing those desalinating water with fossil-fuels based electricity/heat).
Market uncertainties, Profitability	The positive effects of the CS system would depend on the amount of desalinated water and brine generation. If NaCl production is larger enough and cannot be consumed, then it will become waste.	*Not discussed in the CoP*

3.3. Case study 3. Faro-Olhao

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Affordability, Valorization, and User Acceptance	The processing costs of Kaumera add to the costs of the WWTP. The marketization of Kaumera is seen as a way to compensate for the cost and make a business case, or to even lower the sanitation service costs. However, this valorization perspective comes into tension with the idea to introduce Kaumera at low prices to improve its acceptability by farmers.	The price of Kaumera-based products compared to conventional ones is an important issue for stakeholders.
Local vs. Global Circular Economy, and Quality	The valorization of sludge by extracting Kaumera is seen as promoting a circular economy (e.g. local raw materials, industries, and jobs). At the same time, the vision of producing and supplying Kaumera globally, exploring higher-value markets goes beyond the local and leads to a tension with the vision of a local circular economy. Also, the possibility of a standardized global Kaumera supply and its desirability (the same quality for different agricultural uses) remain a question.	There possibility of producing Kaumera for exports is preferred among the participants of the CoP meeting. However, there were few attendees that prefer to keep Kaumera within the local environment
Sustainability Trade-offs	The life cycle of Kaumera, including its extraction and processing as part of a final fertilizer product, implies some environmental impact. These impacts imply a trade-off with the avoided impacts associated to the use of conventional agricultural products, including the compositing of sludge.	Most of the participants of the CoP meeting consider that Kaumera production has to have a positive impact on the reduction of CO_2 emissions.

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Water and Resource Ownership	While the privatization of public resources (waste streams) can be a discussion point, it is considered that valorizing residue streams from the treatment of wastewater can support the reduction of the (public) wastewater treatment costs or incentivize the adoption of CE approaches for (a public) environmental benefit.	*Not discussed in the CoP*
Safety uncertainties: Legislation and Responsibility	Safety is regulated based on what is known, but CE innovations introduce new concerns like medicine residues in sludge and potential impacts (such as antibiotic resistance). Current legislations on sludge may lead to have no concerns on these issues, while on the other side, some questions arise: How can safety be ensured? What would be an acceptable risk if regulations are not up-to-date on some of these issues? What would be considered safe in foreseen WM Kaumera applications? Who´s responsible for safety in this innovation process then?	It was suggested to make a special effort to test, prove and certify the suitability of using Kaumera in organic farming (WWTP sludge cannot be used as organic fertilizer, for instance) given the fact organic farming is promoted at EU and country levels. This aspect is highly valued by most of the participants. Also, some asked about the real meaning of "biodegradable" in the case of Kaumera and about the time/years required to be degraded
Impact uncertainty	There is uncertainty regarding the CS impacts such as waste reduction, resource recovery, safety, economic performance, health and welfare, job creation, energy use and consumption of chemical compounds	Some asked about the percentage of sludge reduction that occurs with the production of Kaumera (20 to 30% of the sludge is converted into Kaumera), and about the sludge quality that remains without being converted to Kaumera, which still needs to be investigated during the process
Viability of Kaumera		There were several questions regarding potential difficulties to apply Kaumera into the soil (e.g. need of special machinery, humidity level, ability to be incorporated into the soil), due to its consistency and humidity. These doubts were clarified by explaining that Kaumera would be an ingredient of the fertilizers. However, some asked about the possibilities of using products with high moisture as solid fertilizers coating. Some request that the Kaumera-based fertilizers have to be liquid, or at least stable colloid solutions, in order to be able to be applied in the fruit orchards through the drip irrigation system. While others mentioned that semi-solid fertilizers could be used in the initial phase of soil preparation for

Aspects	Main issues identified in VSD	Stakeholder response to main issues
		planting trees in fruit orchards or annual crops (e.g., cereals)

3.4. Case study 4. Larnaca

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Valorization and User Acceptance	Some farmers are concerned about the impact of removing phosphorus from the water they currently use for irrigation. It is unknown if the phosphorus recovery will have an impact and, how much, considering their overall fertilizer needs. However, there are no other foreseen alternatives to prevent eutrophication in the water treatment and distribution.	Regarding the removal of phosphorus, most of the farmers agreed that they haven't faced any issue in the irrigation system due to the presence of phosphorus in the water. If removed during the process, they would like Phosphorus to be injected into the irrigation network without any additional fee, so they will be able to control the quantity of the phosphorus applied to their crops.
Efficiency and Long-term Sustainability	A possible consequence of providing extra water for farming emerges as a concern: instead of preventing groundwater extractions, extra water can result in a water consumption increase. That is, the supply of water with low salinity implies the risk that farmers change to more profitable crops that cannot be irrigated with saline water, possibly leading to higher freshwater demand. There is a tension between those supporting the development of new technology to improve the system and those proposing to solve the problem before water arrives to the WWTP: avoid infiltration of salty water in the sewage system.	Stakeholders' express concerns regarding potential increase in the water use due to higher availability of water. These can be controlled by the government by allocated certain amount of water to each farmer depending on the area irrigated and the kind of crops. In Cyprus, profitable crops are the vegetables which are irrigated with advanced irrigation systems (drop irrigation) which leads to water saving. Now, they are mainly irrigating fodder crops using sprinkler irrigation system, which leads to higher water demand. For several years, the sewage board of Larnaca (the owner of the sewage network) has put a great effort to control infiltration of seawater into the network. Unfortunately, there are still some intrusions since the network is lying within the sea water table. The only way to alleviate the problem is to increase the number of the areas served by the network which are in the areas with more dry ground.
Sustainability Trade-offs	There are on-going efforts for the installation of solar panels on-site, which can cover a fraction of the WWTP energy requirements. However, there is a tension with the use of space for RES as the CS is in a Natura 2000 area and close to an airport.	All the stakeholders agreed that the use of renewable energy sources will be a very good and attractive solution. There is the possibility of installing the RES far away from the WWTP, near the reservoir where the water will be stored. This possibility is to be explored.

Reliability-Flexibility	The system is designed to treat current salinity concentrations in the wastewater. However, other measures are proposed to solve the problem, such as avoiding seawater intrusion to the system.	See previous answer.
Water affordability		The main problem that would arise during the promotion of the water treatment system in the market is its cost. The current price of water, which is distributed for agricultural use, is very low. But by adding the proposed process the cost of water would rise, so the government should subsidy the WWTP's

3.5. Case study 5. La Llagosta

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Distributive Justice	There is a question about how costs and benefits should be distributed between, e.g., the industry, the end-user and the general population, considering potential uses of the recovered water and regional water plans.	The water treatment costs and the water price is a very relevant issue for the stakeholders. Some argue that costs must be translated into the price of water, raising awareness on its importance. Also, it is considered that water price should vary depending on its (domestic, urban, industrial, etc). Although prices do not have to be equally distributed, it is desirable that all the costs are translated to the users. But this is seen as something that will cause a lot of social resistance and opposition. As end-users are not the only beneficiaries of using these technologies, the costs can be distributed between actors considering the use given to water.
Efficiency and Long-term Sustainability	The reuse of water and recovery of phosphorus can increase the circularity of the system and potentially also its sustainability. However, it can also be seen as a net gain of resources, with the risk to lead to higher resource consumption and a worse environmental balance than before implementing the innovative technologies.	Regarding the potential increase in water use, stakeholders propose to implement discount bonus on sustainable consumption (in contrast with classic measures based on penalizations), raise awareness on the effect of high consumption levels and implement adequate regulation and control schemes; for instance, not renewing existing water allocations when a new source is available.
	WWTP are seen by some as an end-of-pipe solution, and there are demands for pollution prevention.	*Not discussed in the CoP*

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Local vs. Global Circular Economy	A question emerges on the limits of what circular means. For example, is it considered circular to have a fertilizer produced from recovered phosphorus in La Llagosta and being used or exported in agricultural products around the world?	To boost local circularity, legal changes are needed to allow the reuse of sludge coming from WWTP as fertilizer. Also, there is a generic recommendation on adapting the technologies to the local context where they are implemented, so they will be much more "useful".
Water and Resource Ownership	There are some tensions in the expectations of on who is going to manage and benefit from the recovered resources, as well as intellectual property, especially considering that the WWTP is a public utility and the project received public funds.	*Not discussed in the CoP*
Quality-Cost	Higher qualities imply higher production costs, and because the required amounts and qualities for water re-use is not fully known, it is uncertain if all process steps (to improve water quality) are necessary.	Technologies must be adapted to their local context, need to know the qualities required by the different end-users
Conflicting duties	Recovering water is seen as a potential driver to boost circular economy, but at the same time it is noted that the main objective of the WWTP must be, according to the Water Framework Directive, helping achieve good qualitative and quantitative status of all water bodies. This is a tension about where the main efforts are put.	Need to raise awareness on the role of the WWTP

3.6. Case study 6. Rotterdam

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Efficiency and Long-term Sustainability	The epoxy production prosses raises several sustainability concerns, and there is potential for lock-in effects with the CS, slowing the uptake of renewable resources, and/or the prevention of the use and/or disposal of substances of concern. While project partners foresee no risk about switching to renewables, and chlorine would be recirculated in an almost-closed industrial loop, uncertainties remain on the effects of the proposed system on changing the epoxy process and its long-term sustainability impacts.	*Not discussed in the CoP*

Aspects	Main issues identified in VSD	Stakeholder response to main issues
Safety and Quality Uncertainties	There are safety concerns relate to the use and release of high salinity streams and substances of concern (e.g. toxic or cancerogenic) to the environment. With the brine product entering in an industrial loop, safety concerns seem mostly operational. Other concerns are about the quality of the product for industrial use, and relate to the type, fate, and concentration of organics.	*Not discussed in the CoP*
Safety and Responsibility	The distribution of risks and responsibilities related to the recovery, transport, and use of the brine product.	*Not discussed in the CoP*

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